Supplementary Information

Photodynamics in stable complexes composed of a zinc porphyrin tripod and pyridyl porphyrins assembled by multiple coordination bonds

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**Fig. S1**  UV–vis spectral change upon addition of 2H-Py$_3$P (0 to $3 \times 10^{-6}$ M) to a toluene solution of TPZn$_3$ ($3 \times 10^{-6}$ M) at 298 K.
Fig. S2  UV–vis spectral change upon addition of AuTPyP⁺ (0 to 1.18 × 10⁻⁵ M) to a toluene solution of MPZn (6.4 × 10⁻⁶ M) at 298 K.
Fig. S3  ESI-MS of TPZn₃ in the presence of AuTPyP⁺ in THF. Calculated isotopic distributions for TPZn₃–AuTPyP⁺ (calcd. 2879.9) is shown in inset.
**Fig. S4** $^1$H NMR spectra of (a) MPZn ($6.7 \times 10^{-4}$ M), (b) 2H-Py$_3$P and (c)–(e) MPZn ($4.8 \times 10^{-4}$ M) in the presence of 2H-Py$_3$P; (c) $2.7 \times 10^{-4}$ M, (d) $5.0 \times 10^{-4}$ M and (e) $3.4 \times 10^{-3}$ M in CDCl$_3$. (f) Change in the chemical shift of the *meso*-protons of MPZn upon addition of 2H-Py$_3$P. The curve represents the best fit according to eqn 1.
Fig. S5  Cyclic voltammograms (50 mV s⁻¹) of MPZn (3 × 10⁻⁴ M) in the presence of AuTPyP⁺ (1 × 10⁻³ M) in CH₂Cl₂ containing 0.1 M TBAPF₆: (a) 0.4 to 0.8 V and (b) –0.2 to –0.65 V (vs. SCE).
Fig. S6  UV–vis–NIR spectral change upon addition of TDAE to a toluene solution of AuTPyP$^+$ at 298 K.
Fig. S7  (a) Excitation spectra of 2H-Py3P (blue) and the TPZn3–2H-Py3P complex (red) in deaerated toluene at 298 K. The emission wavelength is 720 nm due to 2H-Py3P moiety. (b) UV–vis spectra of 2H-Py3P (blue) and the TPZn3–2H-Py3P complex (red) in deaerated toluene at 298 K.
**Fig. S8** Differential transient absorption spectra of TPZn$_3$ (6.8 × 10$^{-6}$ M) in the presence of pyridine obtained at 8.5 ps (blue), 400 ps (red) and 2500 ps (black) after femtosecond laser pulse irradiation at 412 nm in deaerated toluene at 298 K.
Fig. S9  Differential transient absorption spectra of (a) TPZn$_3$ in the presence of pyridine and (b) 2H-Py$_3$P obtained after nanosecond laser pulse irradiation at 426 nm in deaerated toluene at 298 K. Time profiles of the differential absorbance for (a) and (b) at 450 nm are shown in (c) and (d), respectively.
Fig. S10  (a) Differential transient absorption spectra of AuTPyP⁺ obtained at 4 ps (blue) and 2500 ps (red) after femtosecond laser pulse irradiation at 412 nm in deaerated toluene at 298 K. (b) Time profiles of differential absorbance at 660 nm for AuTPyP⁺ at 0–3000 ps time intervals.
Fig. S11  (a) Differential transient absorption spectra of MPZn (1.7 × 10^{-5} M) in the presence of excess amount of pyridine obtained at 20 ps (red) and 2500 ps (black) after femtosecond laser pulse irradiation at 412 nm in deaerated toluene at 298 K. (b) Time profile of differential absorbance at 680 nm at 0–3000 ps time intervals.
**Fig. S12** Phosphorescence spectra of AuTPyP$^+$ in the absence (dashed line) and presence (solid line) of TPZn$_3$ in 2-MeTHF at 77 K.
Scheme S13